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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,762	09/23/2005	Remy Bruno	0512-1268	4661
<small>466</small> YOUNG & THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314			<small>7590</small> EXAMINER LAO, LUN S	
			<small>09/15/2009</small> ART UNIT 2614	PAPER NUMBER
			MAIL DATE 09/15/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/528,762

Applicant(s)

BRUNO ET AL.

Examiner

LUN-SEE LAO

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 74-94 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 74-94 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Introduction

1. This action is in response to the amendment filed on 04-29-2009. Claims 1-73 have been canceled and claims 74-94 have been added. Claims 74-94 are pending.

Drawings

2. The drawings were received on 06-19-2009. These drawings are acceptable.

Claim Objections

3. Claim 77 is objected to because of the following informalities: Claim 77 recited "+" sign on line 5 and line 7 should be deleted. Appropriate correction is required.

4. Claim 89 is objected to because of the following informalities: Claim 89 recited "+" sign on line 5 and line 7 should be deleted. Appropriate correction is required.

5. Claim 81 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 81 dependent on claim 7 and claim 7 was cancelled.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 74-94 rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim recites a series of steps or acts to be performed, the claim neither transforms underlying subject matter nor positively ties to another statutory category that accomplishes the claimed method steps, and therefore does not qualify as a statutory process. For example the filtering combinations $\langle C_{l,m}^{l',m'} \rangle$ being intended to be applied to an initial sound field representation $(P_{l,m}^{(i)})$ formed by coefficients representative of the initial sound field in time and in the three spatial dimensions, in order to provide a modified sound field representation $(P_{l,m}^{(f)})$ formed by coefficients representative field representative of that field in time and in the three spatial dimensions method including steps is of sufficient breadth that it would be reasonably interpreted as a series of steps completely performed mentally, verbally or without a

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

machine. **The Applicant has provided no explicit and deliberate definitions of "defining", "establishing" or "determining" to limit the steps to the electronic form of the" the filtering combinations $\langle C_{l,m}^{x',m'} \rangle$ being intended to be applied to an initial sound field representation $\{P_{l,m}^{(I)}\}$ formed by coefficients representative of the initial sound field in time and in the three spatial dimensions, in order to provide a modified sound field representation $\{P_{l,m}^{(T)}\}$ formed by coefficients representative field representative of that field in time and in the three spatial dimensions," and the claim language itself is sufficiently broad to read on a paper calculation question about §101, mentally stepping through the §101 defining, establishing, determining *In re Bilski*, and telling the person who had the question his or her opinion in mathematic for the sound field.**

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 74--94 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claimed limitation as recited in claim 74
-

"a method for determining filtering combinations of a spatial processing operation, the filtering combinations $\langle C_{l,m}^{I,mn} \rangle$ being intended to be applied to an initial sound field representation $\{P_{l,m}^{(I)}\}$ formed by coefficients representative of the initial sound field in time and in the three spatial dimensions, in order to provide a modified sound field representation $\{P_{l,m}^{(I)}\}$ formed by coefficients representative field representative of that field in time and in the three spatial dimensions, the method comprising" was not supported in the specification nor in any other claims and in any figures (see the specification page 20). The specification never disclose the processing of "an initial sound field representation $\{P_{l,m}^{(I)}\}$ formed by coefficients representative of the initial sound field in time and in the three spatial dimensions". It was not supported in the specification nor in any figures and any claim originary presented.

10. Claims 86-94 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claim limitation "a device for determining filtering combinations of a spatial processing operation, the filtering combinations $\langle C_{l,m}^{I,mn} \rangle$ being intended to be applied to an initial sound field representation $\{P_{l,m}^{(I)}\}$ formed by coefficients representative of the initial sound field in time and in the three spatial dimensions, in order to provide a modified sound field representation $\{P_{l,m}^{(I)}\}$

formed by coefficients representative field representative of that field in time and in the three spatial dimensions, the method comprising:

means for defining the processing operation by a set of at least one directivity function, -

means for establishing spherical harmonic coefficients of each directivity function, -

means for determining the filtering combinations from the spherical harmonic

coefficients " was not clearly described in the further detail in the specification (see

specification page 10 line 6-page 11 line 24). In the application as filed, there does not

appear to be any detailed descriptions or disclosure of means of the steps in the figures.

However, the specification never disclosed any means recited in the steps.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 86-94 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. The claim 86 recited limitation "a device for

determining filtering combinations of a spatial processing operation, the filtering

combinations $\langle C_{l,m}^{l',m'} \rangle$ being intended to be applied to an initial sound field

representation $(P_{l,m}^{(I)})$ formed by coefficients representative of the initial sound field in time and in the three spatial dimensions, in order to provide a modified sound field

representation $(P_{l,m}^{(T)})$ formed by coefficients representative field representative of that

field in time and in the three spatial dimensions, the method comprising". The examiner

is not sure whether applicant tries to claim an apparatus or a method. Because, the applicant can not claim an apparatus and a method at the same time in the claim.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14. Claims 74, 77, 78, 80, 82, 84, 86, 89, 90, 92, and 94 are rejected under 35 U.S.C. 102(e) as being anticipated by Moorer(US PAT.6,904,152).

Consider claim 74, as based on 112 first paragraph problem and 101 state above Moorer teaches a method for determining filtering combinations of a spatial processing operation, the filtering combinations $\langle C_{l,m}^{T,ms} \rangle$ being intended to be applied to an initial sound field representation $\{P_{l,m}^{(I)}\}$ formed by coefficients representative of the initial sound field in time and in the three spatial dimensions, in order to provide a modified sound field representation $\{P_{l,m}^{(T)}\}$ formed by coefficients representative of that field in time and in the three spatial dimensions(see figs. 1,3,9 and 10), the method comprising:
defining (2) the processing operation by a set of at least one directivity function,

- establishing (4) spherical harmonic coefficients of each directivity function(see figs. 1 and 3);
- determining (6) the filtering combinations(reads on equation (1))
from the spherical harmonic coefficients(see col. 4 line 6-col. 5 line 40).

Consider claims 77, 78, 80 and 82. Moorer teaches the processing operation is defined by one directivity function and a predetermined operation intended to be applied on: the initial sound field represented as a directivity function(see figs 1-3, 9 and 10 and col. 4 line 6-col. 7 line 63), and the directivity function of the processing operation, the method further comprising: - determining weighting coefficients associated with the predetermined operation(see col. 5 line 40-co.l. 6 line 40), wherein determining (6) filtering combinations comprises determining (30) each filtering combination from a linear combination of the spherical harmonic coefficients (G) with the weighting coefficients (c) (See figs. 3, 4, 9, 10 and see col. 6 line 12-col. 8 line 67); and wherein the predetermined operation is the multiplication operation, for each direction, of the value of the directivity function of the initial sound field and the directivity function of the processing operation(see figs 1-3, 9 and 10 and col. 4 line 6-col. 7 line 63); and wherein the predetermined operation is the convolution operation, for each direction, of the value of the directivity function of the initial sound field and the directivity function of the processing operation(see figs 1-3, 6- 10 and col. 17 line 18-col. 18 line 63); and wherein the processing operation is a distortion, wherein the set of at least one directivity function comprises N pairs of directivity functions which form a set of distortion pairs representative of the distortion, and wherein the filtering combinations

are determined from the spherical harmonic coefficients of the N pairs of directivity functions(see figs 1-3, 6- 10 and col. 17 line 18-col. 18 line 63).

Consider claims 89, 90, 92 and 94 Moorer teaches means for the processing operation is defined by one directivity function and a predetermined operation intended to be applied on: means for the initial sound field represented as a directivity function(see figs 1-3, 9 and 10 and col. 4 line 6-col. 7 line 63), and means for the directivity function of the processing operation, the method further comprising: - means for determining weighting coefficients associated with the predetermined operation(see col. 5 line 40-col. 6 line 40), wherein determining (6) filtering combinations comprises determining (30) each filtering combination from a linear combination of the spherical harmonic coefficients (G) with the weighting coefficients (c) (See figs. 3, 4, 9, 10 and see col. 6 line 12-col. 8 line 67); and wherein the predetermined operation is the multiplication operation, for each direction, of the value of the directivity function of the initial sound field and the directivity function of the processing operation(see figs 1-3, 9 and 10 and col. 4 line 6-col. 7 line 63); and wherein the predetermined operation is the convolution operation, for each direction, of the value of the directivity function of the initial sound field and the directivity function of the processing operation(see figs 1-3, 6-10 and col. 17 line 18-col. 18 line 63); and wherein the processing operation is a distortion, wherein the set of at least one directivity function comprises N pairs of directivity functions which form a set of distortion pairs representative of the distortion, and wherein the filtering combinations

are determined from the spherical harmonic coefficients of the N pairs of directivity functions(see figs 1-3, 6- 10 and col. 17 line 18-col. 18 line 63).

Consider claim 83, as base on 112 first paragraph problem and 101 state above Moorer teaches a method for applying a spatial processing operation to an initial sound field, the method comprising: - establishing an initial sound field representation formed by coefficients representative of the initial sound field in time and in the three spatial dimensions(see figs 1-3, 6- 10 and col. 17 line 18-col. 18 line 63),

- determining filtering combinations of the processing operation, according to the method of claim 74(see figs. 1 and 3), and - applying the filtering combinations to the initial sound field representation(see col. 4 line 6-col. 5 line 40).

Consider claim 84, as base on 112 first paragraph problem and 101 state above

Moorer teaches a method for applying a combination of spatial processing operations to an initial sound field, the method comprising: - establishing an initial sound field representation formed by coefficients representative of the initial sound field in time and in the three spatial dimensions(see figs 1-3, 9 and 10 and col. 4 line 6-col. 7 line 63),

- determining filtering combinations of each processing operation, the filtering combinations being intended to be applied to the initial sound field representation, in order to provide a modified sound field representation formed by coefficients representative of that field in time and in the three spatial dimensions(see figs. 1,3,9 and 10)

- , wherein the filtering combinations of at least one processing operation is achieved by the method of claim 74(see col. 4 line 6-col. 5 line 40), - determining overall filtering combinations by combining the filtering combinations of each processing operation, and - applying the overall filtering combinations to the initial sound field representation
- (see figs 1-3, 6- 10 and col. 17 line 18-col. 18 line 63).

Consider claim 86, as base on 112 first paragraph problem and 101 state above Moorer teaches a device for determining filtering combinations of a spatial processing operation, the filtering combinations $\langle C_{l,m}^{I,sm*} \rangle$ being intended to be applied to an initial sound field representation $\{P_{l,m}^{(I)}\}$ formed by coefficients representative of the initial sound field in time and in the three spatial dimensions, in order to provide a modified sound field representation $\{P_{l,m}^{(I)}\}$ formed by coefficients representative field representative of that field in time and in the three spatial dimensions(see figs. 1,3,9 and 10), the method comprising:

Means for defining the processing operation by a set of at least one directivity function,

Means for establishing spherical harmonic coefficients of each directivity function(see figs. 1 and 3);

Means for determining the filtering combinations(reads on equation (1)) from the spherical harmonic coefficients(see col. 4 line 6-col. 5 line 40).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 75, 76, 87 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moorer(US PAT. 6,904,152) in view of Elko et al. (US 2003/0147539).

Consider claim 75 Moorer teaches characterized in that the sets of coefficients representative of the initial sound field representation (see figs 1-3, 9 and 10 and col. 4 line 6-col. 7 line 63); but Moorer does not explicitly teach that sets of coefficients called Fourier-Bessel coefficients.

However, Elko teaches characterized in that the sets of coefficients representative of the initial sound field representation and of the modified representation are sets of coefficients called Fourier-Bessel coefficients(see figs 1-3 and page 3 [0049]-[0062]).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teaching of Elko into the teaching of Moorer to can be implemented for orthogonal harmonic expansion.

Consider claim 76 Moorer as modified by Elko teaches the method further comprising specifying a parameter (L) representing the order limit of the Fourier-Bessel coefficients (In Elko, see figs 1-3 and page 3 [0049]-[0062]).

Claims 87 and 88 they are essentially similar to claims 75, 76 and are rejected for the same reason stated above apropos to claims 75 and 76.

Response to Arguments

17. Applicant's arguments with respect to claims 74-94 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Metcalf (US PAT. 6,740,805) is cited to show other related method and system for processing a sound field representation.

20. Any response to this action should be mailed to:

Mail Stop ____ (explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:
(571) 273-8300

Hand-delivered responses should be brought to:
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (571) 272-7501. The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao,Lun-See
/LUN-SEE LAO/
Examiner, Art Unit 2614
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501
Date 09-09-2009

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614

